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# Resilience through Enhanced Adaptation Action-learning, and Partnership (REAAP) Baseline Study Report November 2015



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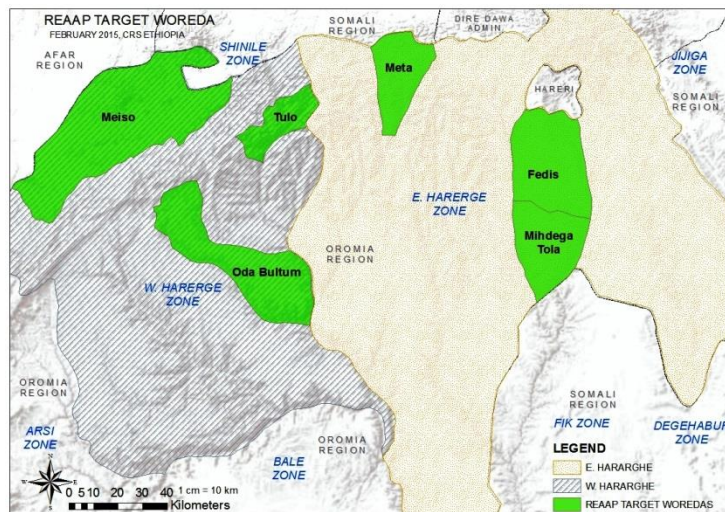


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<b>AOR name:</b>	Mr. David Horton
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<b>Submitted by:</b>	Nikaj van Wees, Chief of Party REAAP <b>Catholic Relief Services</b> Swaziland Street, Gulele Sub City, Addis Ababa, Ethiopia Tel: +251 912 505 169 Email: <a href="mailto:Nikaj.vanWees@crs.org">Nikaj.vanWees@crs.org</a>
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## Activity Overview

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<b>Geographic coverage:</b>	6 Woredas in East and West Hararghe in Oromia Region



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Woldu Terefe  
&  
Ketema Kebebew

## ***ACRONYMS***

CBOs	Community based organizations
CI	Confidence interval
CM-DRR	Community managed disaster risk reduction
Cordaid	Catholic Organization for Relief & Development Aid
CRS	Catholic Relief Services
DAs	Development Agents
DPPO	Disaster Prevention and Preparedness Office
ECC-SDCOH	Ethiopian Catholic Church Social Development Coordination Office of Harar
FGD	Focus group discussion
FtF	Feed the Future
GCC	Global climate change
GPS	Global positioning system
HEWs	Health extension workers
HI	Handicap International
KII	Key informant interview
Km	Kilometer
NGOs	Non-governmental organizations
OFDA	U.S. Office of Foreign Disaster Assistance
PDP	Primary Distribution Point
PITT	Performance Indicator Tracking Table
PPS	Probability proportion to size
REAAP	Resilience through Enhanced Adaptation, Action learning and Partnership
SMS	Short message service
TLU	Tropical Livestock Unit
UNDP	United Nation Development Program
U.S.	United States
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government

## ***EXECUTIVE SUMMARY***

### **Introduction**

Resilience through Enhanced Adaptation, Action Learning and Partnership (REAAP) is a cooperative agreement funded by U.S. Agency for International Development (USAID) and covers the period from October 2014 to September 2017. It aims to *sustainably increase resilience and reduce long-term vulnerability* of about 475,000 people in 100 kebeles of six target woredas in East and West Hararghe.

### **Methodology**

This survey is to set baseline benchmarks for REAAP outcome indicators that would be used for comparison against results of a similar final survey that would be conducted at the end year, and also it helps estimate the out year targets. The sample size for the survey was determined based on the activity target: to increase *percentage of farmers using improved technologies or management practices by 10% from the baseline*". Two stage cluster sampling approach was used by considering *kebeles* as primary sampling units and households as secondary units. Twenty sample *kebeles* and 34 households per *kebele* (20X34) were used to sample 680 households. Household data was collected using 15 mobile iPad devices and this data were daily synced to cloud database, using local area wireless computer networking technology (WiFi) and 3G internet access at field. Paired sample t-test, 95 percent confidence interval and 0.05 level of significance ( $\alpha=0.05$ ) were used for analysis.

For reporting purpose, the indicators used for this survey can be grouped into seven thematic areas: 1) livelihood and income source; 2) climate change perception and adaptation practices; 3) vulnerability; 4) weather and early warning information; 5) risk reducing practices; 6) technologies and management practices, and 7) institutional capacity. To further explain the REAAP outcome indicators, the survey has collected data for auxiliary variables that could further describe those indicators.

### **Demographic characteristics**

The survey population had male population relatively higher (52%) than female population (48%), with an average family size of 6.2 persons per household. About 8 percent households were headed by females and only 5 percent were polygamous. More than half (57%) of heads of households are illiterate and didn't read and write. The literacy rate among female head of households was significantly lower than male heads of households at 95 percent confidence interval ( $p\text{-value}= 0.00$ ,  $\alpha=0.05$ ).

### **Livelihoods and income source**

Household income is predominantly dependent on crop farming, followed by livestock rearing/fattening and cash crop production, respectively. The average land holding size of the survey household was 0.6 hectares. Sorghum, maize and peas/beans were found to be the three major food crops in order of importance. Although the average Tropical Livestock Unit (TLU) (3.98) at the time of survey (2015) was greater than that of last year (2.3), at 95 percent level of significance, the result indicated no significant growth ( $p\text{-value}=0.124$ ) between the two successive years.



### **Vulnerability and disaster risk**

There is statistically significant income decrease for over half (51%) of the households, while income remained stable for 10 percent of the households over the last five year period. Recurrent drought and crop pest infestation were found to be predominant disasters affecting rural households of the area. Out of the sample households, 82 percent of the farmers had been affected by disaster and 79 percent of them had lost economic assets as a result of disaster. Nearly half (51%) of the households who lost their economic assets recovered from the impact of the disaster over different time spans, the average being 3.5 months. Only 32 percent of households were able to restore their livelihood within 3-6 months after a disaster, with the support of external aid/assistance.

### **Climate change perception and adaptation practices**

Three-fourth (75%) of households had heard about climate change issues although there were differences among households in how they perceived changes in overall climate condition, temperature and rainfall. Nonetheless, large proportions of farmers perceived at least one aspect of climate change and 86 percent of the households reported the impacts of climate change as well as possible response mechanisms, indicating good understanding of the impact of climate change.

### **Weather and early warning information**

Households received different early warning information and weather forecasts on rainfall, planting time, extreme weather events, pest infestation and diseases outbreaks. Over half (58%) of households received at least one early warning message from at least one source prior to occurrence of disaster in the study area.

Radio broadcasting (38%) is the predominant source of information followed by community extension/development workers (35%) and village dwellers/neighbors (14%), respectively. The result of the survey also indicated that more than half (55%) of households use this information to plan and make decisions about crop planting harvesting and threshing seasons.

### **Risk reducing practices/actions**

The surveyed households were asked about 14 contextualized risk reducing practices and the number of adaptation and risk reducing practices they implement. On average, a household practiced 5.8 types of risk reducing practices, with highest proportion (15%) of the households practicing six out of the 14 risk reducing practices that improve resilience as a response action to climate change impact. On average, households in the bottom quartile (25%) were found to be implementing about three risk reducing practices while households in the last (fourth) quartile practiced nearly nine risk reducing practices.

### **Technologies and management practices**

On average, 5.6 out of 15 improved technology types and management practices were used by households. The survey result indicates that a large proportion of households (18%) use 5 technologies and management practices to address climate change adaptation while only less than 1 percent of households do not use improved technologies and management practices at all. On average, households in the first quartile (25%) are found implementing nearly three

technologies and management practices while households in the last quartile practice 8.5 technologies and management practices.

**Institutional capacity**

Only 6 percent of government sector offices have fully developed capacity in understanding of the National/Regional Climate Change Adaptation Policy, Strategy and Framework. While only 15 percent of government sector offices in the REAAP operation area have the required capacity to plan, implement, monitor and evaluate climate change, only 9 percent have a fully developed climate change knowledge management capacity. Overall, the total survey responses indicate that 21 percent of the institutions have fully developed capacity to address the impact of climate change.

Table 1. Summary of outcome indicator results

PITT Ref #	Outcome indicator	Baseline <sup>1</sup> [N (%)]	95% CI
1	Number of stakeholders <sup>2</sup> with increased capacity to adapt to the impacts of climate change as result of USG assistance (GCC), disaggregated by:	1075 <sup>3</sup>	(1014, 1133).
a	Using climate change information in their decision making.	372	(347, 398)
b	Implementing risk reducing practices/actions to improve resilience to climate change.	100	(82, 116)
c	With increased knowledge of climate change impacts and response actions.	603	(585, 619)
2	Percent of beneficiaries reporting their livelihoods restored within three to six months after receiving support (OFDA).	31.7%	(28%, 35%)
4	Percent of stakeholders using climate information in their decision making (CRS).	54.7%	(51%, 58.5%)
10	Percent of community members who received at least one early warning message from at least one source prior to a disaster occurring (OFDA).	58.1%	54.4%, 61.8%
11	Number of farmers and others who have applied improved technologies or management practices as a result of USG assistance (FtF) <sup>4</sup> .	90	(75,109)
23	Number of institutions with improved capacity to address climate change issues as a result of USG assistance (GCC indicator).	14	(12, 16)
27	Number of people implementing risk-reducing practices/actions to improve resilience to climate change as a result of USG assistance (FtF) <sup>5</sup> .	100	(82, 116)

<sup>1</sup>The number in this report indicates the result of the sample household. However, REAAP will determine the activity outcome indicators target based on this finding. N is a count out of 680 surveyed household and % indicates percent out of the sample survey as per the indicator's unit of measure.

<sup>2</sup> Stakeholders refer to number of households.

<sup>3</sup>The aggregate has triple count effect (a+b+c) as it was done as per the GCC indicator handbook (2013). The Author suggests USAID/GCC should look in to this composite index indicator calculation.

<sup>4</sup> Remark: the baseline value (90) indicates the number of households implementing four improved technologies out of fifteen contextual practices).

<sup>5</sup>Remark: the baseline value (100) indicates the number of households who are implementing seven risk reducing practices out of fourteen contextually appropriate practices in the area where REAAP wants to capitalize on. Thus the number of people is  $100 \times 6.2 = 620$  out of 4,201 people of the survey household.

## **1. INTRODUCTION**

### **1.1. An Overview of REAAP**

Resilience through Enhanced Adaptation, Action learning and Partnership (REAAP) is a three year cooperative agreement funded by U.S. Agency for International Development (USAID). It is implemented in a consortium of Catholic Relief Services (CRS), Ethiopian Catholic Church Social and Development Coordination Office of Harar (ECC-SDCOH), Catholic Organization for Relief & Development Aid (Cordaid) and Handicap International (HI) in six chronically drought affected and food insecure *woredas* of East (Fedis, Midhega-Tola and Meta) and West (Mieso, Oda-Bultum and Tulo) Hararghe Zones of Oromia National Regional State. REAAP is a three year project that runs from October 2014 to September 2017. Its main purpose is to *sustainably increase resilience and reduce long-term vulnerability of 475,000 people (95,000 directly and 380,000 indirectly) in 100 kebeles in the six targeted woredas.*

The strategy used in REAAP is Community Managed Disaster Risk Reduction (CM-DRR) method will be the vehicle and community DRR facilitators and community DRR committees are the main drivers of the project that iteratively develop, refine, and share technical and indigenous knowledge to inform livelihood choices in order to develop successful adaptation models.

#### **1.1.1. Purpose and Intermediate Results of REAAP**

**REAAP Purpose:** Communities of East and West Hararghe Zones have sustainably increased resilience and reduced long-term vulnerability to current and future climate change and climate-related shocks and stresses.

**IR 1:** Communities have improved access to technical information and analytical tools for decision making.

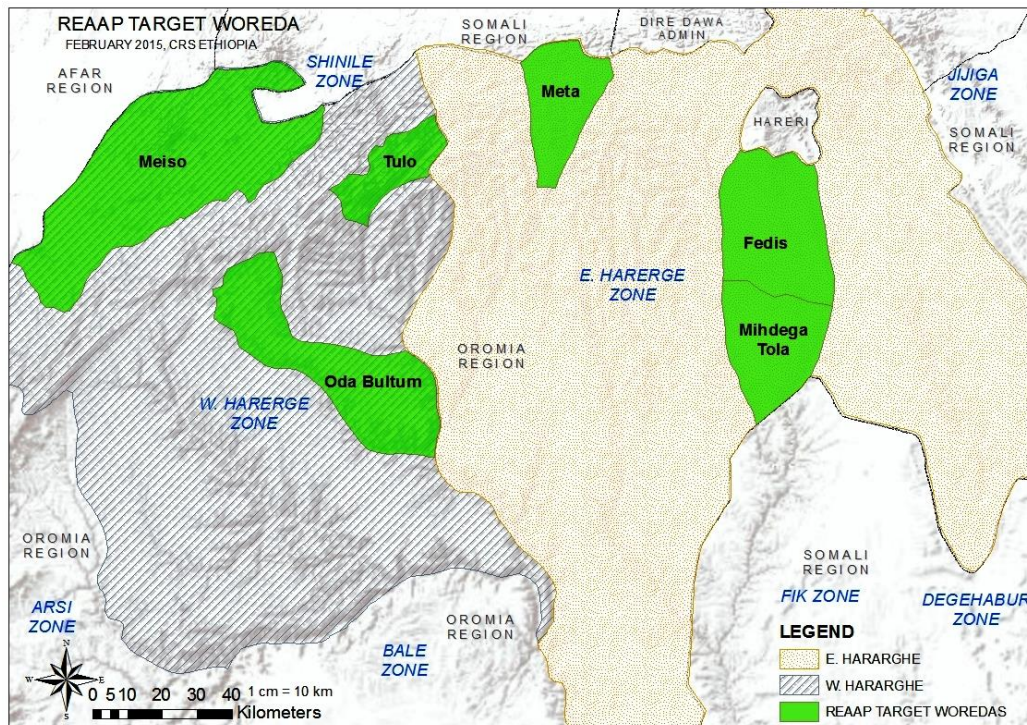
**IR 2:** Communities identify and implement actions that increase resilience to climate variability, long-term climate change and climate-related shocks.

**IR 3:** Systems for planning, implementation, monitoring and evaluation around DRR and climate change adaptation are established and strengthened through working with government and other stakeholders.

### **1.2. REAAP Operation Area**

REAAP operates in six chronically drought affected *woredas*: Fedis, Midhega-Tola, Meta of East Hararghe and Oda-Bultum, Mieso, and Tulo Woredas of West Hararghe Zones of Oromia National Regional State. The activity targets 100 *kebeles* selected in a participatory way from farming, pastoral and agro-pastoral livelihood zones. The farming *kebeles* are highland areas, predominantly characterized by crop farming, while the pastoral and agro-pastoral *kebeles* are dependent primarily on livestock production and fattening and crop-livestock farming system, respectively.

**Figure 1.** Map of REAAP operational area.



### 1.3. Objectives of the Baseline Survey

The overall objective of the baseline survey is to generate statistically valid information for outcome level indicators that will serve as the basis for comparison with the same type of information that will be collected for final evaluation. More specifically, the baseline survey has the following objectives:

- Determine the baseline values for outcome indicators to assess impact of the intervention at final evaluation.
- Collect data to determine the level of change on outcome indicators between baselines and final year as deemed necessary.
- Help establish annual and end-line targets for Performance Indicator Tracking Table (PITT) indicators as applicable.
- Suggest recommendations for REAAP intervention in line with the findings.

## 2. SURVEY METHODOLOGY

The baseline survey was designed to provide baseline values and annual estimates for the outcome indicators of the project. The sample was drawn from all the target *woredas* to ensure representativeness from the six *woredas*. The survey was conducted internally under the leadership of REAAP Learning and Knowledge management/Technology Advisor in designing, analyzing and producing this report.

### 2.1. Sampling and Sample Design

A two-stage cluster sampling technique was employed where the primary units (*kebeles*) were selected using Probability Proportional to Size (PPS) and the secondary units (households) were selected using systematic random sampling technique from the selected *kebeles*. The sample size determination was made on the basis of *'percentage of farmers using improved technologies or management practices'* as an outcome indicator of the activity. The sample size was determined to provide reliable estimates of indicators at 95% confidence and 80% power.

To reach the estimated sample size of 20 *kebeles* and 34 households per kebele/cluster, a total of 680 households with 10% additional households to adjust for non-response cases were used. The primary sampling units- *kebeles*-were selected from the 100 target *kebeles* before the beginning of the fieldwork. Secondary sampling units- households- were selected by the field team leader and field supervisors using systematic random sampling technique.

The sample size for the baseline survey, which will help in making a before and after comparison for the final evaluation/impact evaluation was determined using the following sampling formula:

$$n = \frac{D * [(Z + Z_{\beta})^2 * \{p_1(1-p_1) + p_2(1-p_2)\}]}{(p_2 - p_1)^2}$$

Where,

n = size of the sample; D = design effect (D = 2); P<sub>1</sub> = the value of the key indicator at baseline (or a proxy value); P<sub>2</sub> = the planned target value of the key indicator at the end-line/final evaluation; Z = the Z-score corresponding to the probability level desired (here, P<sub>1</sub> = 0.45 and P<sub>2</sub>=0.55; Z = 1.645; Z<sub>β</sub> = the Z-score corresponding to the power level desired (here, beta= 0.8 thus Z = 0.84). => 2 [(6.175 \* 0.495) / 0.1<sup>2</sup>] = 2 [(3.056625) / 0.01] = 2 (305.6625), = 611.325 = 611. Including 10% non-response => 611 \* 0.1 = 672 households were determined for data collection.

As there was no initial information on either of the REAAP outcome indicators, the value of P<sub>1</sub>= 0.45 was taken for maximum sample size, with 10 percent expected increase of farmers using improved technologies or management practices over the three year project life, making P<sub>2</sub> = 0.55.

In order to further understand the baseline situation, seven focus group discussions (FGD) and five key informant interviews (KII) were conducted in the three major livelihood zones. All-male and all-female groups, as well as mixed groups were engaged during FGD. Moreover, *kebele* Development Agents (DAs), *kebele*/community leaders and potential key informant were

interviewed to collect information on general climate change and livelihood. Thus, the findings of the qualitative FGD and KII are presented in recommendation section.

Table 2. Summary table of sample kebeles

<b>Woreda</b>	<b>REAAP Kebeles</b>	<b>Sample kebeles</b>
Fedis	13	4
Meta	21	4
Midhega-Tola	16	3
Mieso	19	3
Oda-Bultum	17	3
Tulo	14	3
<b>Total</b>	<b>100</b>	<b>20</b>

## 2.2. Outcome Indicators and Questionnaire Design

Baseline data were collected for eight major REAAP outcome indicators that are also Feed the Future (FtF), Global Climate Change (GCC) and Office of U.S Foreign Disaster Assistance (OFDA) indicators. The survey questionnaire was designed in a modular form based on FtF, GCC and OFDA indicator definitions and activity operational context. Structured and semi-structured questionnaires were developed, tested and used for data collection from households while open ended questions were applied for qualitative FGD and KII interview discussion. The following table indicates the structure of the full set modules included in the questionnaire.

Table 3. Contents and structure of the household questionnaire

<b>Module</b>	<b>Module description</b>
MODULE I:	Household Identification
MODULE II:	Household Demography
MODULE III:	Livelihoods, Vulnerability & Adaptation Practices
MODUEL IV:	Household Perception on Climate Change and Risks
MODULE V:	Technologies & Management practices
MODULE VI:	Institutional Capacity

The survey questionnaires were designed mainly using FtF indicator handbook (October 2014) GCC indicator handbook (October 2013) and USAID/OFDA Guidelines for proposal (2012). The questions and indicator formulation methods for the eight indicators were taken from these guides. However, questions for institutional capacity assessment were developed with reference to UNDP and USAID institutional capacity assessment guides.

Questionnaires were prepared in English and designed in iFormbuilder data collection form. Then training was given to enumerators and supervisors in the local language, Afan Oromo. All team members and enumerators involved on the data collection are capable of understanding and translating English to Oromiffa for household interview and data collection. Furthermore, the questionnaire was piloted, tested and updated prior to the baseline survey. Both iPad minis and iPads were used for field household data collection.



### **2.2.1. Staffing**

The baseline survey used 20 well experienced REAAP staff pooled from CRS and ECC-SDCOH and included four external enumerators, with the objective of maximizing efficiency and reducing costs. It was conducted under the leadership of REAAP LKM/T Advisor and partner staffs were involved in data collection and field supervision. During the fieldwork, on average, each enumerator completed six to seven questionnaires per day. A supervisor per three to four enumerators was assigned, to oversee data collection and ensure data quality. Supervisors collected mobile devices with field data from the enumerators for spot checking and quality assurance on a daily basis. Once the data was verified and checked for its quality, supervisors submitted the devices with daily data to CRS field team leader so that the data is synched with iFormbuilder cloud database. In addition, qualitative data collection through FGD and KII were conducted by a team of three consisting of staff from CRS and ECC-SDCOH.

### **2.2.2. Training of field supervisors and enumerators**

CRS organized two-days training for field supervisors and enumerators on usage of mobile devices and data collection tools. Additional orientation was given to field supervisors on household sampling methodology, data quality control and survey questionnaire. Following this intensive training, questionnaires were piloted in the field with close supervision and on spot checking, in order to further enhance the skills of enumerators. In addition, supervisors and the team leader ensured the sole interaction between the interviewee and the respondent to keep the confidentiality of the data and data collection process and quality control.

The questionnaire was uploaded in to iFormbuilder and installed on to iPad devices for training and field data collection. Survey data was collected using 15 iPad devices, of which fourteen collected GPS coordinates. Once the data on the mobile devices was completed, cleaned and verified for the data quality, field supervisors and the team leader synced the data every day, via internet. The baseline data was collected from February 16 to March 2, 2015.

### **2.3. Data Management and Analysis**

Following the completion of the field work, data was transferred from the iFormbuilder system in excel spreadsheet and imported to SPSS and Stata softwares for cleaning and analysis. Once the data cleaning was completed, analysis was done and further data cleaning was conducted using SPSS version 22 and Stata13 softwares alternatively, to look into frequency distributions and cross tabulations in order to identify outlier. Out of the data from 699 households, nearly 3 percent was dropped and only 680 household data were used for analysis and reporting.

### **2.4. Organization of the Baseline Survey Report**

The survey report is organized into six chapters. Chapter one gives background information on the project, its objectives, scope and organization of the baseline survey. Chapter two presents the methodological approach. The third chapter presents socio-demographic characteristics of the households. The fourth chapter reports on livelihood, vulnerability and adaptation practices. Chapter five presents climate adaptation, capacity and risk reducing practices of households at the base year. Lastly, chapter six provides conclusions and key recommendations for future programming.



## **2.5. Limitations**

Analysis of survey data for GCC outcome indicators presented as “Number of stakeholders with increased capacity to adapt to the impact of climate variability and change as result of USG assistance disaggregated by a) using climate change information in their decision making; b) implementing risk reducing practices/actions to improve resilience to climate change; c) with increased knowledge of climate change impacts and response actions (GCC)” and some others was found to be very challenging. This is because the indicator is presented as a composite index of three extensive indicators making it very challenging to analyze and collate data under the main indicator. Moreover, absence of standardized cut-points and threshold for PITT indicators: 1(a, b, c) and also for indicator 23 and 27 were very challenging to measure and estimate the baseline value. Accordingly, the Author was forced to use the mean score and quartile distributions to help estimate the baseline value and set target for out-years.

### 3. POPULATION AND DEMOGRAPHIC CHARACTERISTICS

#### 3.1. Demographic Characteristics of the Survey Population

The baseline information was collected from 680 households in REAAP operational areas. Respondents were evenly distributed based on gender, with 49 percent female and 51 percent male respondents. These domestic units count a total of 4,201 people, and an average of 6.2 persons per household. While 8 percent of the households were headed by a female, there were no child heads of a household and the nuclear family system was the predominant norm, with a household consisting of heads, spouses, sons and daughters. Further, nearly 7 percent of the households in the survey area had a person with disability, with 3 percent as sons/daughters and about 1 percent as head of a household.

In terms of respondents, head of households, spouses and sons or daughters make about 52, 44 and 3 percent respectively. As presented in Table 4 below, the family members constitute about 99 percent of the sample population. Based on this fact, extended family system is very rare for the study households.

Table 4. Relation to head of household

Relation to household	Percent
Head of household	52.4
1 <sup>st</sup> wife	42.4
2 <sup>nd</sup> , or 3 <sup>rd</sup> wife	1.3
Son or daughter	3.4
Son/daughter in law	0.1
Mother or father of 01/02/03	0.3
Other relatives	0.1
Total	100.0
Number of households (n)	680

#### 3.2. Age and Marital Status of Household Heads

The mean age for survey respondents was 37 years, with the lowest age being 18 years and the highest, 78 year. The mean age for a head of a household in the survey area was 41.3 years, with the lowest age being 19 and the highest at 80. As indicated in Table 5, over three-fourth (89%) of heads of households was married while the remaining 1 percent were divorced and/ or separated and 5 percent were divorced/separated and widowed, respectively. Less than 1percent household heads are single. A large portion of female heads of households is widowed (54.4%) while 7 percent of the female heads are divorced and/ or separated. In general, there were only 5 percent polygamous households.

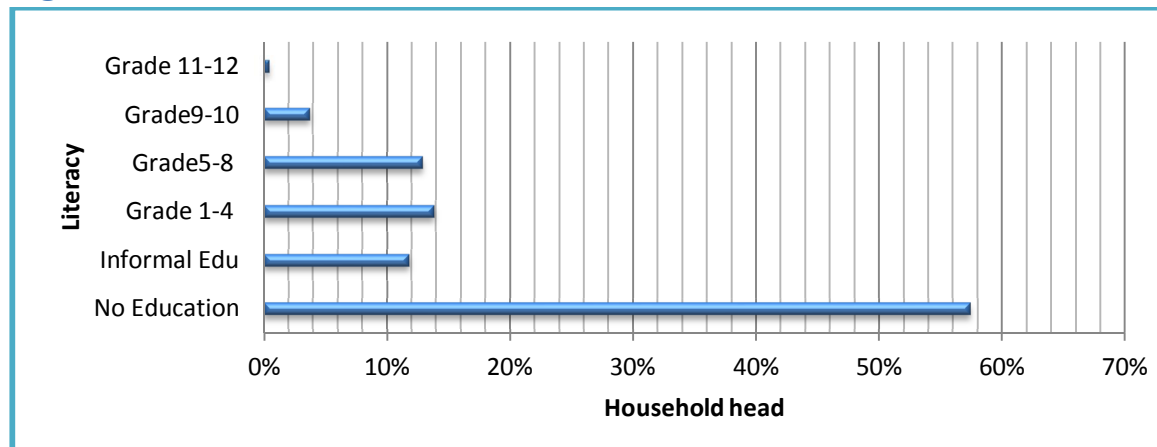
Table 5. Marital status of household heads

Marital Status	Percent
Married (monogamous)	88.7
Married (polygamous)	5.1
Single	0.3
Divorced or separated	1
Widowed	4.7
No answer	0.1

### 3.3. Household Head Education Status

As presented in figure 2 below, the educational status of heads of households was analyzed and the result indicates that large proportions (57%) of heads of households are illiterate and unable to read and write. Only 12 percent of heads of households have informal education/religious education while about 14 percent have attended basic education (grades 1-4) and 13 percent have primary education (grades 5-8). The remaining 4 percent of heads of households attended secondary school (grades 9 to 10). The result also indicated that about 45 percent of male heads and 19 percent female heads are literate, indicating that literacy rate of female-headed household is significantly low as compared to the literacy rate of male-headed households (P-value= 0.00).

**Figure 2.** Educational status of heads of households.



## **4. LIVELIHOOD, VULNERABILITY & ADAPTATION PRACTICES**

### **4.1. Livelihoods and Income Source**

Subsistence crop farming and livestock production are the major means of generating livelihood in the survey area. The major food crops grown in the area include sorghum, maize, barley, soybean, chickpea and kidney bean (öAshengoreö).

Households were asked questions to assess their sources of income and household livelihoods. Livelihood questions were administered to identify the three main sources of household income and the relative contribution of each activity to total income. Accordingly, household income is predominantly dependent on crop farming (85%) followed by livestock rearing/fattening (51%) and cash crop (chat, coffee and tobacco) accounting 24 percent.

To assess the level of income diversification and access to credit services, households were asked whether they have diversified sources of income and credit services. The result indicated that about one-third (34%) of the surveyed households do not have diversified income sources and only 14 percent of the households have received loan for various reasons. The predominant (72%) households who received loan used the credit to run income generating activities such as small businesses and petty trade while 13 percent used the credit to buy agricultural inputs (crop seed and synthetic fertilizer) and 9 percent used it to buy food for family consumption. According to the findings of the survey, nearly one-fourth (24%) were unable to pay back their loan, mainly, due to death of livestock (27%) and crop failure (14%).

#### **4.1.1. Food crop production**

Land size and major food crops cultivated in the area were considered in order to collect the data necessary for estimating the level of crop production in the operational *woredas*. To this end, households were asked about the size of their cultivated land and the types of food/stable crops they produced. The average land holding size of the survey household was 0.64 hectares where nearly all households (97%) cultivate food crops. Sorghum, maize and pea/beans were found to be the three major food crops approximately accounting for 58, 47 and 19 percent of crop production in order of importance. Nearly 9 percent of the survey household access 14.3 hectare of land for irrigation farming. More than three-fourth (77%) of the survey households use crop and livestock input investments to increase their farm production and productivity of their farm. The FGD and KII respondents mentioned problems associated with lack of improved and short seasoned sorghum, pea/bean seed that could overcome the shortage and early cessation of rain in the survey area. Because of shortage and early cessation of rainfall, farmers in the survey area are discouraged from using synthetic fertilizers. The farmers explained that synthetic fertilizer burns the crop when there is no sufficient rain and as well as due to poor crop performance the estimated value of the harvest and the price of synthetic fertilizer does not match.

#### **4.1.2. Livestock asset holding**

Livestock rearing, cattle and small ruminant fattening and trade are among the major asset and income source in the survey area. To see the trend in livestock holdings over two years, the survey compared values of household livestock asset holdings at the time of the survey period against the previous year. Households were asked about the amount of their livestock holdings and the value of one animal in Birr at the time of the survey (2015). One year recall was

preferred to avoid bias related to recall over long period of time for livestock trend data. The survey examined the current number of livestock holding and number owned a year ago as well as the current value in Birr to replace one on a range of 13 different livestock types. However, because of the bias associated with the accuracy of estimating asset value by the household and lack of standard of measurement of livestock price the data was not used for analysis.

Nonetheless, Tropical Livestock Unit (TLU<sup>6</sup>) was used instead, to compare the growth of livestock over one year period. Although the average TLU at the time of survey was greater (3.98) than the year before (2.31), the result indicated no significant growth difference at 95% percent level of significance (P-value = 0.124) between the two successive years. Households were asked about the reasons behind limited change over the one year period. The main reasons found were that 28 percent of households were forced to sell their assets in order to buy food, and 15 percent of households' livestock were died due to diseases and drought.

#### **4.2. Vulnerability and Disaster Risks**

The survey examined households' vulnerability to climate change and its impact on their livelihood. Recurrent drought, erratic rain fall, hailstorm, flood, crop worm and pest infestation, windstorm (ōshoolaø), land slide, gully expansion were found to be among the major hazards and disasters affecting the area.

In most of the survey areas, the qualitative FGD and KII respondents identified lack of improved seed varieties and capacity to afford seed price, lack of access to credit, shortage of animal feed, land shortage and high population pressure as the major factors that exacerbate the impact of climate change. Land shortage together with gully expansion has significantly eroded the soil limiting land productivity and crop production.

Further, households were asked to rank the three major climate change related shocks and disasters affecting their area. The three predominant disasters affecting rural households of the area were found to be drought (28%), crop pest infestation (23%), and again crop pest infestation re-appeared as third disaster (12%).

As a result of the climate change impact, 51percent of the households have reported a decrease in their income while about 10 percent of households maintained a stable income over the past five years. In the last five years, over three-fourth (82%) of the farmers were affected by a disaster/stress, out of which 79 percent lost economic assets. Nearly half (51%) of the households who lost their economic asset recovered from the impact of the disaster.

The most vulnerable groups are landless households, households with a large family size, households without livestock, labor deficient households with young children and elderly, people with disability, widowed women, pregnant/lactating mothers, child-headed households, chronically ill individuals and women, though the level of their vulnerability varies. Thus, a household survey data collected using a Likert scale<sup>7</sup> from 1 to 4 was used to assess the level of vulnerability among different segments of community. Accordingly, 93 percent of survey

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<sup>6</sup> As suggested by Jahnke (1982); Camel =1.0 TLU, Cattle=0.7TLU, Shoats = 0.1 TLU, Horse =0.8 TLU, Mule = 0.7 TLU, Ass = 0.5 TLU, Pig =0.2 TLU and Poultry= 0.01 TLU.

<sup>7</sup> 1= not vulnerable, 2= less vulnerable, 3= moderately vulnerable, 4= highly vulnerable.

respondents have witnessed that child-headed household are highly vulnerable to food insecurity and the impact of climate change. Similarly, about 77, 58 and 57 percent of the responses indicate that women in child headed households, adult female in no adult male households and women in women headed households are highly vulnerable to food insecurity and climate change impact, respectively (see Annex 1).

According to the survey, nearly one-third (32%) and about half (50%) of the households are able to restore their livelihood within 3-6 months and 7-12 months, respectively with external assistance - at an average of 3.52 months per household. On the other hand, only 17 percent of households are able to restore their livelihood within 3-6 months without external assistance by their own effort. As it was explained during FGDs and KIIs, this result is specific to households dependent up on rain-fed crop farming which takes one season of rain to rebuild their crop production. However, pastoralists and agro-pastoralists who are primarily dependent on livestock fattening and production explained that it takes a much longer time to recover from disaster impact and rebuild their livestock asset. The summary of household recovery, disaggregated by sex of head of household, time interval, with and without assistance is presented in table 6 below.

**Table 6.** Households reporting livelihood restoration and time interval, post-disaster

Category	Time interval	Male	Female	Total
With assistance	0 to 2 months	19.4%	17.7%	18.6%
	3 to 6 months	33.0%	30.4%	31.7%
	7-12 months	47.7%	51.9%	49.7%
Without Assistance	0 to 2 months	12.9%	8.1%	10.6%
	3 to 6 months	17.9%	15.8%	16.9%
	7-12 months	69.2%	76.2%	72.5%

To measure the adequacy of households' access to food during the last 12 months prior to the survey (from March 2014 back to February 2015), the sample households were asked whether they had enough food to cover their needs from all sources of food, during the last 12 months. Based on this, the survey households had enough food for 7.5 months per year on average. This means that the average survey household had food shortages for about 4.5 months per year, indicating high level of food insecurity.

As presented in table 7 below, the survey result shows that only 5.4 percent of the sample households had enough food to eat throughout the reference year, indicating high level of food insecurity for the other 95 percent of the households.

**Table 7.** Households by number of months with enough food during 2014/2015

# of Months	0	1	2	3	4	5	6	7	8	9	10	11	12
% of HHs with adequate food	0.3	0.3	0.6	2.6	3.7	8.2	12.9	17.1	23.7	19.4	4.6	1.2	5.4
Average number of months with adequate food from different source	Mean = 7.5, CI = (7.35, 7.66)												

### 4.3. Climate Change Perception and Adaptation Practices

Farm level climate change adaptation involves perceiving the change in climate and deciding how to adapt to climate change, and which adaptation strategy to choose. Nonetheless, perception only is not an adequate condition for adaptation (Maddison, 2007). Farmers who perceived the change in climate may not adapt to the change, and/ or their adaptation response may vary as a result of a complex interaction between social, economic and institutional factors (Maharjan et al. 2011; Bryan et al. 2009).

To examine the level of farmers' perception on climate change and adaptation practices in the study area, questions that encompass household perception of climate change, access to weather and early warning information, use of information for agricultural decision making, climate change response options and existing adaptation practices were administered.

Accordingly, nearly three-fourth (75%) of the respondent households have heard about climate change issues although there are differences among households in how they perceive changes in overall climate condition, temperature and rainfall. The large proportions (96%) of households perceived an increase in temperature over the last 5 to 20 years. On the other hand, 93 percent of respondents perceived decrease in rainfall. This indicates that a large proportion of farmers perceived at least one aspect of climate change, indicating a high level of perception among households in the study area.

Further, in order to examine households' knowledge about the impact of climate change and response actions appropriate questions were administered to 680 households. Accordingly, 86 percent of households reported that climate change has an impact and appropriate response options while 3 percent of households reported climate change has no impact and response option. Therefore, 86 percent of the households have knowledge of climate change impact and response option.

**Table 8.** Knowledge of climate change impact and response options

Description	Percent response
Climate change affects me	92.9
Climate change doesn't affect me	3.7
I don't know the effect yet	3.4
Climate change problem cannot be solvable	68.7
Climate change problem can be solvable	17.5
I do not know	13.8
<b>Combined result</b>	
Climate change has impact and response option	85.7
Climate change has no impact and response option	2.9
<b>Indicator 1c: households with increased knowledge of climate change impacts and response actions</b>	<b>85.7 (n=680)</b>

### 4.4. Access to Weather and Early Warning Information

To examine households' source of information, multiple response questions were asked and the results obtained are indicated in Table 9 below. Households were asked how they first came to

know about climate change issues. The main sources of information include village leaders, neighbors, traditional indigenous knowledge practitioners, elders, *woreda* agriculture office, community extension/development workers, and radio transmission. Most often, the information transmitted from agriculture office and radio transmission focuses on rain forecast including untimely rain, onset of rain and commodity market.

Nearly three-fourth (75%) of respondents knew about climate change issues. The predominant source of information in the survey area is radio broadcasting; accounting for 39 percent, followed by 35 percent community extension/development workers and 14 percent information is from village dwellers/neighbors.

**Table 9.** Households source of climate change information, disaggregated by sex of survey respondent

Source of information	Male(n=344)	Female (n=336)	Total (n=680)
Radio	36.0%	40.5%	38.5%
Television	0.0%	0.6%	0.3%
Mosque/church/religious leaders	1.5%	0.3%	0.9%
Cooperatives/CBOs (Idir, Ikub, etc)	0.6%	0.0%	0.3%
School children/School mass-media	1.5%	1.8%	1.6%
Extension agents (DA, HEWs, KM)	35.5%	34.2%	35%
Neighbors/village	16.0%	12.5%	14.4%
Community early warning committee	1.5%	1.2%	1.3%
Traditional leaders/elders	12.8%	13.7%	13.2%
Meteorology, researchers and NGOs	0.3%	0.3%	0.3%
Market centers/Traders/input providers	0.6%	0.9%	0.7%
Agriculture/Pastoralist office/DPPO	5.2%	5.1%	5.4%
<b>Overall source of information</b>			
No source of information	41.9%	42.0%	41.9%
At least one source of information	58.1%	58.0%	58.1%

Households receive different early warning information and weather forecasts on rainfall, planting time, extreme weather events, pest infestation and diseases outbreaks. Thus, over half (58%) of households received at least one early warning message from at least one source prior to occurrence of a disaster in the area of study.



**Table 10.** Type of Early warning information received, disaggregated by sex of survey respondent

Description	Male (n=344)	Female (n=336)	Total (n=680)
Forecast of onset of rain and cessation of rain	54.7%	55.4%	55.0%
The likely intensity of rain	34.0%	38.1%	36.0%
Forecast of sowing/planting time	49.1%	48.5%	48.8%
Risk projections for extreme weather events	18.3%	18.5%	18.4%
Forecast of pest or disease outbreak	20.1%	19.3%	19.7%
Anticipated temperature and its impact on crop & livestock	21.8%	22.3%	22.1%
Changing soil moisture and/or temperature	13.4%	12.2%	12.8%
Soil water availability under future scenarios	7.6%	6.3%	6.9%
Percent of community members who received at least one early warning message from at least one source prior to a disaster occurrence (OFDA)	58.7%	57.4%	58.1%

As indicated in Table 10 above, large proportion (55%) followed by 49 percent of households receive weather forecast on rainfall and planting time, respectively.

#### 4.5. Application of Early Warning Information

Climate change information concerning forecasting, adaptation options, and other agricultural production activities are important factors affecting the use of various adaptation measures for most farmers. Availability of better climate and agricultural information helps farmers make comparative decisions among alternative crop management practices, allowing them to select better climate change coping strategies (Baethgen et al. 2003 and Jones, 2003).

In line with this, the sample households were asked whether they use weather and climate information to make farm level decisions. More than half of the households (55%) use the information to make different farm level decisions. The majority (47%) use this information to plan and make sowing and harvesting related decisions, while 44 percent of the farmers use it to decide on threshing season. The summary of the type of decisions made by households based on the information they have received is presented in Table 11.

**Table 11.** Summary of farm level decisions by Households

<b>Farm level decisions</b>	<b>Male (n=344)</b>	<b>Female (n=356)</b>	<b>Total (n=680)</b>
Planning for planting time/season	46.5%	46.7%	46.6%
Forecast harvesting and trashing time	42.7%	45.2%	44.0%
Select type of seed/crop to plant	15.1%	15.2%	15.1%
Plan for type of weeding	3.5%	2.1%	2.8%
Select type of fertilizer	6.4%	8.0%	7.2%
Use pesticides	4.1%	4.2%	4.1%
Forecast onset and cessation of the rain.	3.8%	6.3%	5.0%
Forecast the likely intensity of expected rains	1.7%	3.3%	2.5%
Forecasts drought/hunger	3.2%	3.9%	3.5%
Forecasts planting time/season	5.2%	3.0%	4.1%
Forecast flood warnings	0.9%	0.6%	0.7%
Forecast market prices (crops, livestock, etc)	1.2%	3.3%	2.2%
Forecast the likely occurrence of conflict	0.0%	1.2%	0.6%
Forecast human diseases outbreak	0.3%	0.0%	0.1%
Forecast crop diseases, and livestock diseases	2.0%	3.0%	2.5%
Share with others/villages/elders/neighbors	4.9%	3.3%	4.1%
Select better/best crops to plant	0.6%	1.2%	0.9%
Informs time and type of weeding	0.9%	0.3%	0.6%
Forecast livestock movement/migration	0.0%	0.9%	0.4%
<b>Combined</b>			
Percent of households using climate change information in their decision making	54.7% (n= 680), CI=(0.510, 0.585)		
Female	53.57% (n=336)		
Male	55.81% (n= 344)		

According to FGDs and key informants, the early warning information provided is not adequate for agricultural decision making. Some community members didn't trust the information disseminated due to its unreliability, resulting in low uptake of the information for decision making.

## 5. CLIMATE ADAPTATION, CAPACITY & RISK REDUCING PRACTICES

### 5.1. Risk Reducing Practices/Actions

To collect baseline information for REAAP indicator “household capacity in implementing risk-reducing practices/actions to improve resilience to climate change as a result of USG assistance” and to examine households’ existing climate change adaptation and risk reducing practices in the study area, several questions in relation to risk reducing practices, adaptation technologies and management practices were asked.

Based on current practices, REAAP selected a total of 14 contextualized risk reduction practices<sup>8</sup> and used the collection to assess the number of climate change adaptation and risk reduction practices implemented by the surveyed households. The result indicated that on average, a household practices nearly 5.8 types of risk reducing practices. While the highest proportion, 15 percent of households practice six out of 14 risk reducing practices, the lowest proportion, only (0.1%) of households practice all 12 risk reducing practices to improve their resilience and response to the impact of climate change.

Since REAAP has neither standardized cut-points for the number of risk reducing practices/actions which need to be practiced to achieve increased capacity to adapt to the impact of climate variability, nor a threshold level to define increased capacity, households were divided in to quartiles, after arranging them in ascending order to determine the average number of risk reducing practices for each quartile.

Accordingly, on average, households in the bottom quartile (25%) were found to be implementing nearly three risk reducing practices while households in the last quartile practiced nearly nine risk reducing practices. REAAP may use the third quartile distribution to determine the minimum required risk reducing practices needed to measure increased capacity to adapt to the impact of climate change. Based on this assumption, therefore, seven risk reducing practices could be taken as the number of risk reduction practices that should be adopted by households.

**Table 12.** Mean quartile distribution of risk reducing practices

Average number of practices	Quartile
3.04 risk reducing practices	First (25%)
4.91 risk reducing practices	Second (50)
6.55 risk reducing practices	Third (75%)
8.58 risk reducing practices	Last quartile
<b>Mean = 5.72 and CI = 5.61, 5.93</b>	

Depending on the objective of REAAP to improving communities resilience to climate change impact and disaster, REAAP may target to raise the average risk reducing practices of

<sup>8</sup> These are: rain water harvest\*, Soil and water conservation practices\*, organic fertilizer (dung/manure), diversified income source, intercropping\*, high yield and drought tolerant crop seed\*, replanting, crop rotation/switching\*, range land reclamation/area enclosure\*, mulching, bush thinning from pasture land, hay making, small scale irrigation use\* and rearing different livestock species. \*The seven minimum risk-reducing practices to enhance resilience at household level.

households in the bottom quartile (1<sup>st</sup>) and 2<sup>nd</sup> quartile from the current values to the value indicated in the 3<sup>rd</sup> or last quartile (top quartile) in the operational areas.

## 5.2. Technologies and Management Practices

The survey identified a total of 15 improved technologies and management practices which are currently practiced and contextually applied in the project area were identified. Appropriate questions were developed and used to collect baseline information on these technologies and management practices to be promoted by the activity to address climate change adaptation and mitigation. The questions were developed in reference to the FtF indicator definition for *“number of farmer and others who have applied improved technologies or management practices as a result of USG assistance”*. The result indicates that a large proportion of households (18%) are using 5 out of 15 improved technologies and management practices practiced in the area<sup>9</sup>. At the household level, 5.6 improved technologies and management practices are used on average.

To estimate the threshold for the number of improved technologies and management practices, households were divided into quartiles after arranging them in ascending order and quartile distribution of households were applied to determine the average number of technologies and management practices. Accordingly, on average, households in the first quartile (25%) were found to be implementing nearly three technologies and management practices while households in the last quartile practices 8.5 technologies and management practices on average. Similar to section 5.1, for this indicator, REAAP may also use the third quartile distribution (approximately seven technologies/management practices) to determine the minimum required practices as a measure of improved resilience to the impact of climate change. Thus, the number of household implementing seven technologies/management practices can be determined based on this assumption.

**Table 13.** Mean quartile distribution of technologies and management practices

Average number of practices	Quartile
2.94 improved technology and management practices	First (25%)
4.65 improved technology and management practices	Second (50)
6.26 improved technology and management practices	Third (75%)
8.45 improved technology and management practices	Last quartile
<b>Mean = 5.6 and CI = (3.8, 7.3)</b>	

Accordingly, assuming seven technologies/management practices to be the minimum measure of improved resilience to the impact of climate change, the baseline survey documented hectares of land where improved technology and management practices were used. This baseline information would, therefore, serve to inform FtF indicator: *“number of hectares of land under improved technologies or management practices as a result of USG assistance”*. Towards this

<sup>9</sup> These are: rain water harvest, planting tree seedling, organic fertilizer (dung/manure) utilization, intercropping, high yield and drought tolerant crop seed\*, energy saving stoves, bush thinning from pasture land, replanting crop seeds, crop rotation/switching, organic fertilizer\*, Rangeland reclamation/enclosure, mulching, SWC practices\*, hay making, small scale irrigation use\* and rearing different livestock species. The “\*” indicates the four minimum technology/management practices to enhance resilience at household level.

end, households were asked whether they practice the following technologies and management practices: bush thinning from pasture land, inter-cropping, high yielding/drought tolerant crops, irrigated land and planting tree seedling in their home yard or farmland. On average, the results were found to be 0.42 hectare used for bush thinning from pasture land, 0.41 hectare used for intercropping, 0.37 hectare used with high yielding/drought resistant crops, 0.23 hectare used for irrigation and 0.08 hectare of (domestic or farmland) land used for planting tree seedlings. On average, only 0.22 hectare of land was treated with organic fertilizer and range land protections.

### **5.3. Institutional Capacity**

REAAP has conducted local government institutional capacity assessment on 66 sector offices and departments situated in two zones and six target *woredas*. This assessment tool was developed based on institutional capacity assessment tool developed by UNDP and USAID. REAAP has adopted and customized the tools to assess the readiness and preparation of local government offices to respond to the impact of climate change.

The tool has been designed to assess sector capacity in four main areas: 1) *National/Regional climate adaptation policy, Strategy and framework*; 2) *Capacity for the Planning, Implementation, Monitoring and Evaluation for Climate Change*; 3) *Capacity for Climate Change Knowledge Management* and 4) *Capacity for Community Engagement*. Specific questions in each area were formulated, where respondents rated their answers from 1 to 5 where 1 is ÷no evidence of capacityø and 5 is ÷with fully developed capacity.

In addition, trained REAAP experts conducted interviews with specific sector experts and stakeholders individually and rated their responses accordingly. The assessment was conducted for agriculture office/pastoralist office, Natural Resource Management office, Health office, Education office, Water and Energy resource office, Women & children affairs office, DPPO/EW and Food security government offices. To that effect, the institutionsø representatives/focal persons responded to the questions related to the four categories of institutional capacity as shown in Table 14 below.

Thus, the result indicates that only 6 percent of sector offices have a fully developed capacity in National and/or Regional climate adaptation policy, strategy and framework. This indicates the majority of the sector experts, process owners and institutions donø have adequate knowledge of the National and Regional climate change frameworks, policy and strategy for proper planning and implementation. Regarding capacity for planning, implementation, monitoring & evaluation for climate change, only 15 percent of the institutions reported having fully developed capacity for proper planning, implementation, monitoring and evaluation of climate change projects and activities. Similarly, only 9 percent of the institutions had fully developed capacity in managing climate change knowledge and incorporating it in climate change risk management and opportunities. Lastly, only near 2 percent of the institutions had the required skill and knowledge in engaging communities in identifying and prioritizing climate change activities and alternative, sustainable livelihood opportunities and activities. Overall, the total surveyed responses indicated that only less than one-fourth (21%) of the institutions have a fully developed capacity to address climate change issues.

**Table 14.** Institutional capacity assessment on Likert scale, n=66

Institutional capacity	1.No evidence of capacity	2.Subjective evidence of capacity	3.Partially developed capacity	4.widespread but not comprehensive capacity	5.Fully developed capacity
<b>A.</b> National/Regional CC Adaptation policy, Strategy & framework	42 (63.6%)	58 (87.9%)	59 (89.4%)	23(34.8%)	4 (6.1%)
<b>B.</b> Planning, Implementation, M & E for CC	43 (65.2%)	60 (90.9%)	60 (90.9%)	25 (37.9%)	10(15.2%)
<b>C.</b> CC Knowledge Mgt	37 (56.1%)	56 (84.8%)	56 (84.8%)	17 (25.8%)	6 (9.1%)
<b>D.</b> Community Engagement	34 (51.5%)	50 (75.8%)	57 (86.4%)	15 (22.7%)	1(1.5%)
All Surveyed responses	53 (80.3%)	65 (98.5%)	64 (97.0%)	33 (50.0%)	14 (21.2%)

## **6. CONCLUSIONS AND RECOMMENDATIONS**

According to the findings of the survey, household income in the survey area is predominantly dependent on crop farming, accounting 85 percent followed by livestock rearing and/ or fattening (51%) and cash crop production (24%). While the average land holding size of the survey household was 0.64 hectares, sorghum, maize and pea/beans were found to be the three major food crops accounting 58 percent, 47 percent and 19 percent of production respectively. More than three-fourth (77%) of the surveyed household use crop and livestock input investments to increase the production and productivity of their farm.

As to awareness of climate change and coping mechanisms, on average, households in REAAP operation area use 5.8 out of 14 types of risk reducing practices and 5.6 out of 15 improved technologies and management practices. Therefore, food crop production can be enhanced through promotion of high yielding and drought tolerant food crops. Livelihood diversification would also enhance adaptation to the effects of climate change.

Further, promoting organic fertilizer, watershed management based soil and water conservation practice including gully treatment, small scale irrigation facilities and access to agricultural technologies and management practices such as improved and high yielding crop seeds primarily sorghum and maize through the existing extension system and rural financial services are indispensable tools for improving productivity in the project area.

Households in the REAAP operation area are highly vulnerable to food insecurity and climate change risks and stresses. On average, surveyed households had food shortages for about 4.5 months per year indicating high level of vulnerability. The survey revealed that children in no-adult households, women in child-headed households and adult females in no-adult male households are among the three highly vulnerable community groups in the area. Thus, REAAP should prioritize these vulnerable groups and ensure their active participation throughout the project life cycle, in order to enhance their resilience.

The result also indicated that about 34 percent of the surveyed households do not have diversified sources of income and only 14 percent of the households receive loans for different reasons. Enhancing and scaling up existing risk reducing practices, diversifying household income by promoting saving and income generation activities, as well as facilitating credit are key in generating activities geared towards asset building.

In REAAP operation areas, 75 percent of the respondent households have heard about climate change issues. The large sect (96%) of the households has perceived an increase in temperature over the last 5 to 20 years. On the other hand, 93 percent of respondents perceived a decrease in rainfall while 5 percent perceived an increase. This indicates that a large proportion of farmers have perceived at least one aspect of climate change, signaling a high level of climate change awareness among households in the study area.

Likewise, over four-fifth (89%) of the households in the REAAP operation area have some knowledge of the impact of and responses to climate change. More than half (58%) of households have received at least one early warning information from different sources. As a result, 55 percent of surveyed households use early warning information to make different farm level decisions. About 47 percent of households and 44 percent of the households use this

information to plan for sowing, harvesting and threshing times. Thus, improving access to weather forecast and early warning information through community network, extension workers and the radio messaging would contribute towards improving community knowledge so that they can use this information for decision making.

With provision of external assistance 51 percent of households who lost their economic asset recovered from the impact of the disaster. Out of this 32 percent and nearly 50 percent of the households are able to restore their livelihood within 3-6 months and 7-12 months, respectively. However, only 17 percent of households are able to restore their livelihood within 3-6 months without external assistance. Shows the need for technical and financial support to build the capacity of households to absorb shock and strengthen their resilience towards the effects of climate change.

As identified during the institutional capacity assessment survey, communities are not sufficiently engaged in identifying, prioritizing and mainstreaming climate change adaptation activities, at planning, monitoring, implementation or evaluation phases of projects and activities. Therefore, REAAP should work closely with the regional and local government offices towards building institutional capacity in knowledge management to enhance readiness to climate change response mechanisms. It should design appropriate disaster risk reduction strategies that are informed by action research and that make use of improved, contextualized climate change adaptation technologies applicable at local level.



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## Annexes

### *Annex 1. Degree of vulnerability among different community catagories.*

(Likert scale: 1=not vulnerable, 2= less vulnerable, 3=moderately vulnerable, 4. Highly Vulnerable).

Category	Response	Sex of the Respondent		
		MALE	FEMALE	Total
1.Adult Male No adult female HHs:	Not vulnerable	5.5%	6.3%	11.8%
	Less vulnerable	14.2%	14.8%	29.0%
	Moderately vulnerable	20.6%	21.4%	42.0%
	Highly vulnerable	8.2%	9.0%	17.2%
2.Adult female no adult male HHs	Not vulnerable	0.1%	0.2%	0.4%
	Less vulnerable	5.4%	6.8%	12.3%
	Moderately vulnerable	14.1%	14.9%	29.0%
	Highly vulnerable	28.8%	29.5%	58.3%
3.Child no adult HHs	Not vulnerable	0.1%	0.0%	0.1%
	Less vulnerable	0.7%	1.2%	1.9%
	Moderately vulnerable	2.8%	2.1%	4.9%
	Highly vulnerable	44.9%	48.2%	93.2%
4. Women in women headed HHs	Not vulnerable	0.4%	0.1%	0.4%
	Less vulnerable	3.2%	3.7%	6.9%
	Moderately vulnerable	17.6%	18.2%	35.8%
	Highly vulnerable	27.4%	29.5%	56.8%
5. Women in male headed HHs	Not vulnerable	3.8%	4.3%	8.0%
	Less vulnerable	19.0%	21.0%	40.0%
	Moderately vulnerable	21.2%	22.9%	44.0%
	Highly vulnerable	4.6%	3.3%	7.9%
6. Women in child headed HHs	Not vulnerable	0.0%	0.1%	0.1%
	Less vulnerable	1.7%	2.7%	4.4%
	Moderately vulnerable	9.4%	9.4%	18.8%
	Highly vulnerable	37.4%	39.2%	76.6%
7. Male headed HHs	Not vulnerable	10.1%	10.6%	20.7%
	Less vulnerable	25.8%	26.2%	52.0%
	Moderately vulnerable	9.3%	10.8%	20.1%
	Highly vulnerable	3.4%	3.9%	7.3%

## Annex 2. Household questionnaire.

### Introduction

*Greet the person you are interviewing, and introduce yourself. Explain where you come from.*

We are here to request your participation in a survey of households in East and West Hararge woredas. It is being conducted jointly by CRS Ethiopia and ECC-SDCOH. It is designed to help the two organizations to know the impact of climate change, disaster risk, vulnerability and capacity of households to cope up in your kebele and help the implementation of development activities/programs in your area. We would like you to know that your participation is voluntary. Second, we would like to assure you that your identities will at all times be kept confidential and that your answers will not be used in any way other than for the purpose of conducting research on climate change and its impact on the life and livelihoods of the community.

Do you have any questions before we continue?

Are you willing to be interviewed? *[If s/he agrees to be interviewed, start the interview. If the respondent is not willing, do not ask any of the questions and move to the next household.]*

### MODULE I. HOUSEHOLD IDENTIFICATION

Instruction: please refer the list of woredas and kebeles from the sample list provided by the team leader/supervisor.

No.	Item	Name
	East Hararge Zone (EHZ) 1= Fedis 2= Meta 3 = Midhega-Tola	West Hararge Zone (WHZ) 4= Mieso 5= Tulo 6 = Oda-bultum
101	Woreda Name (drop down menu)	
102	Kebele name (drop down menu)	
103	Zone name (use code given from 1-6)	
104	Name of Household Head (text)	
105	Questionnaire ID # (self-generated)	
106	Name of the respondent (text)	
	Date of interview (self-generated)	DDMMYY
107		
108	Interview Start Time (self-generated)	Hour: _____ minutes: _____
109	Interview End Time (self-generated)	Hour: _____ minutes: _____

### Data Processing Checks

110	Enumerator Name (pick from list)		
111	Supervisor Name (pick from list)		

## MODULE II: HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS

<b>201.</b> Sex of respondent (drop down menu)	1. Male                      2. Female														
<b>202.</b> Age of respondent (MUST be 18 years and older)	_____ years														
<b>203.</b> Respondent relationship to head of household	01 = Head of household 02 = 1st wife 03 = 2 <sup>nd</sup> , or 3 <sup>rd</sup> wife 04 = Son or daughter 05 = Son/daughter in law 06 = Grandson/granddaughter 07 = Mother or father of 01/02/03									08 = Father/mother in law of 01/02/03 09 = Brother or sister of 01/02/03 10 = Other relatives 11 = Adopted child, custody 12 = No relationship 13 = Stays here 98 = Don't know					
<b>204.</b> Sex of head of household please check with <b>Q104</b> above	1. Male headed                      2. Female														
<b>205.</b> Age of head of household	_____ years														
<b>206.</b> Marital Status of head of household (single-response question)	1 = Married (Monogamous) 2 = Married (polygamous) 3 = Single									4 = Divorced or Separated 5 = Widowed 6 = No answer					
<b>207.</b> Household head educational status; what is the highest grade level completed? (Single-response question)	1 = No Education 2 = Can read or write (informal/religious education only) 3 = Grade 1-4 (Primary School) 4 = Grade 5-8 (Primary School)									5 = Grade 9-10 (secondary school) 6 = Grade 11-12 (Preparatory)\ 7 = Above grade 12 (University/College)					
<b>208.</b> Currently how many persons live in your household, including yourself?	<b>Total</b>			<b>&lt; 5 Years</b>			<b>5-18 Years</b>			<b>19-60 Years</b>			<b>&gt; 60 Years</b>		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
<b>209.</b> Are there any members of the household with disability?	1. Yes                      2. No									<i>If no Skip to Q301</i>					
<b>210.</b> If yes to Q209, what is the relation to the head of household? (Multiple response if there are more than 1 PWD)	01 = Head of household 02 = 1st wife 03 = 2 <sup>nd</sup> , or 3 <sup>rd</sup> wife 04 = Son or daughter 05 = Son/daughter in law 06 = Grandson/granddaughter 07 = Mother or father of 01/02/03									08 = Father/mother in law of 01/02/03 09 = Brother or sister of 01/02/03 10 = Other relatives 11 = Adopted child, custody 12 = No relationship 13 = Stays here 98 = Don't know					
<b>211.</b> If yes, do they use assistive devices?	1. Yes                      2. No									<b>If no skip to Q301.</b>					
<b>212.</b> If yes, what type of assistive devices they use? (Multiple response if there are more than 1 PWD)	1. Wheel chair 2. Crutch 3. Cane						4. Walking stick 5. Stylus/Braille 6. Hearing aid								

### MODULE III: LIVELIHOODS, VULNERABILITY & ADAPTATION PRACTICES

<b>Household livelihoods and perception. Based on the below information please ask the respondent Q301.</b>			
<b>Now I will ask you about your livelihood/major income sources. Use the below code when the respondent responds to Q301 below. Please do not mention the list for the respondent. Probe if the respondent is not clear.</b>			
1. Crop agriculture/farming (food crops, vegetables, fruits, etc) 2. Livestock (production/rearing/fattening) 3. Mixed crop-livestock farming 4. Cash crop (coffee, Chat, tobacco) 5. Skilled trade /artisan 6. Microenterprise/Medium /Large business		7. Casual labor ó Agriculture & non-agriculture 8. Formal salary/Pension 9. Petty trade (Chate, Tela,Areke, etc) 10. Land lease/land renting 11. Agro-forestry product (timber, firewood, charcoal, hand crafts, etc). 12. Remittance 13. Government/NGOs Food/Cash aid	
<b>301.</b> What are the <b>three most important</b> source of household income/livelihood in order of importance? <i>Enumerators: please probe the respondents if he/she couldn't list three most important ones in order (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> income sources)</i>		1. First important: _____ 2. 2 <sup>nd</sup> important: _____ 3. 3 <sup>rd</sup> important: _____	
<b>302.</b> Over the last five years how do you describe the pattern of your income?	1. Increasing	2. Decreasing	3. No change/stayed the same
<b>303.</b> Have you ever been affected by any hazard/disaster shocks/stress (in the past five years)?	1. Yes	2. No	<b>If No skip to Q308</b>
<b>304.</b> If yes to Q303, did you loss any asset/livelihoods as a result of the disaster?	1. Yes	2. No	<b>If No skip to Q308</b>
<b>305.</b> If yes to Q304, did you recover from the impact of disaster?	1. Yes	2. No	
<b>306.</b> Following Q305 <i>after the impact of disaster</i> how many months or years had it taken/will it take the household to get back to the previous livelihood situation/condition (recover from the impact of disaster)? <b>(If the response is less than a year use month otherwise use year if the response is in year).</b>			
<b>A. Without external assistance/aid (Government, NGO, relative, etc)</b>		<b>B. if you get external assistance/aid (Government, NGO, relative, etc)</b>	
1. If in months: _____	2. If in year: _____	1. If in months: _____	2. If in year: _____
<b>Based on the following information ask the respondent/household question 307</b>			
1. Recurrent drought 2. Heavy flood/erosion 3. Sever Wind storm 4. Short rain 5. Prolonged rain/to much rain fall 6. Shift in planting and harvesting time/date 7. Pest infestation 8. Early onset of rain 9. Late onset of rain 10. Early cessation of rain 11. Crop failure/Poor yield 12. Excessive heat, excessive humidity, cold weather		13. Hunger/food insecurity 14. High cost of food items 15. Malnutrition 16. Human disease outbreak 17. Tribal conflict 18. Water shortage/scarcity 19. Increased Livestock diseases 20. Livestock lose weight/loss body condition 21. Decreased Livestock market price 22. Increased human disease (diseases outbreak) 23. High livestock death 24. Frost/Hailstorm	

<b>307.</b> If yes, to Q303 above, what were the three most important disaster affected your life/livelihoods in the past 1-5 years? Please name in order of importance from 1 to 3 from the above list. <b>Enumerators:</b> please probe if not clear for the respondent.		1. <b>First important:</b> _____	
		2. <b>2<sup>nd</sup> important:</b> _____	
		3. <b>3<sup>rd</sup> important:</b> _____	
<b>308.</b> Is the household safety net (PSNP/HABP/PCDP) beneficiary household (receiving food and cash for six months)? (Please ask HH ID to cross-check)		1. Yes      2. No	<b>If yes skip to Q310</b>
<b>309. If no,</b> why was your household <b>not</b> selected to participate in safety net program (cash and food transfer)? <b>(Multiple response)</b>			
1. We have some land/enough land/ or better quality land		5. We are not so poor as the selected	
2. We own livestock		6. We do not need to participate in Safety net public work	
3. We have other income		7. Our household did not receive food aid or cash aid in history	
4. We are not targeted/registered to participate in PSNP			
<b>310.</b> Have you ever got any credit service during the last 1-5 years?		1. Yes      2. No	<b>If No skip to Q314.</b>
<b>311.</b> If yes to Q310 above, for what purpose you received loan/credit?	1. To buy food for family consumption.		4. To get social services (health, education, wedding, funeral, etc) 5. For loan repayment
	2. To buy Agricultural inputs (seed, fertilizer, etc)		
	3. To run income generation activities (business, petty trade etc)		
<b>312.</b> Have you encountered any difficulty in repaying the debt credit for production purpose?		1. Yes      2. No	
<b>313. If yes to Q312, what is the reason?</b>	1. Loss of crop (crop failure)		5. It was stolen/robbed 6. Used for social services (education, health, funeral, wedding, dabo, idir, etc) 7. Loss of livestock/death 8. Business failure/bankruptcy
	2. No other income source		
	3. Use the money for other purpose (for consumption)		
	4. Used to pay previous loan		
<b>Crop and livestock production, inputs/technologies</b>			
<b>314.</b> Do you cultivate <b>food crops</b> (please cross-check with <b>Q301</b> above response)		1. Yes      2. No	<b>If no Skip to Q319</b>
<b>315.</b> How many hectares of land do you cultivate (own and/or rent)? (convert local unit to hectare)			_____ hectares
<b>316.</b> What are the three major <b>food crops</b> you cultivate, in order of importance? (USE the below code list)			<b>1<sup>st</sup></b> . _____ <b>2<sup>nd</sup></b> . _____ <b>3<sup>rd</sup></b> . _____
1. Maize	3. Barely	5. Teff	8. Ground nut
2. Sorghum	4. Wheat	6. chickpea	9. pea/beans
		7. Sesame	10. Potato
<b>317.</b> Do you use irrigation for crop cultivation?		1. Yes      2. No	<b>If no, skip to Q319</b>
<b>318.</b> If yes Q317, how many hectares of land do you cultivate using irrigation?	<b>Type of land</b>		<b>Hectares (convert the local unit to Ha)</b>
	1. Own land		_____
	2. Rented land		_____
	3. Share cropping		_____

<b>319.</b> Do you use any farming/livestock inputs (investment on Agriculture)					1. Yes    2. No	<b>If no, skip to Q321</b>													
<b>320.</b> If yes to Q319, do you use the following inputs? <b>Enumerator:</b> please ask clearly the following one by one and give the response as 1 or 2.					1. Yes	2. No													
<b>1. Improved crop Seeds</b>	<b>3. Inorganic fertilizers</b>	<b>2. Organic Fertilizers (manure, compost, etc)</b>	<b>4. Insecticides &amp; fungicides</b>	<b>5. Animal feeds</b>	<b>6. Veterinary drugs &amp; Vaccines</b>	<b>7. Pesticides</b>	<b>8. Improved/cross breed Animals</b>												
1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes	1. Yes												
2. No	2. No	2. No	2. No	2. No	2. No	2. No	2. No												
<i>Now I will ask you few questions about livestock type you rear or own today compared to the past year.</i>																			
<b>321.</b> How many of the following livestock species do your household own, as of today? Including any animals that belong to you, but are being raised by other households, but do not include any animals that you are rearing for someone else which are not belong to you. <i>If HH have none, write '0' in the columns.</i>																			
S/n	Asset type	# owned today	# owned one year ago	Current Cost of replacing one [in Birr]	If the number owned today is different from one year ago, why? [See code below and circle <u>all</u> that apply]														
(a)		(b)	(c)	d	(e)														
<b>Livestock</b>																			
1	Oxen	1	2	10,000	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	Bulls				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3	Cows				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4	Heifers				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5	Calves				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
6	Sheep				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7	Goats				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
8	Donkeys				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
9	Mules				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10	Horses				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
11	Camel-Male				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
12	Camel-Female				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
13	Poultry (chicken)				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

<b>Codes: Differences in asset ownership</b> 1 = HH was forced to sell the asset to buy food 2 = HH was forced to barter/exchange the asset for food 3 = HH was forced to sell the asset to pay for health expenses 4 = HH was forced to sell the asset to pay for education expenses 5 = HH had to sell the asset to meet social obligations (e.g. wedding 6 = HH used the asset in a social occasion (e.g. wedding gift) 7 = the asset was stolen		8 = Livestock died due to disease/drought 9 = Livestock was sold as an income-generating activity 10 = Livestock reproduced 11 = HH bought this asset 12 = Someone gave us this asset for free 13 = Government projects (PSNP/HABP/PCDP) assisted us to create assets 14 = NGO (s) have assisted us to create assets 15 = Sold for other reason (house construction, etc)
322. What are the major factors affecting Crop production in this area?	1. Unpredictable rain fall 2. Increased pest and disease 3. Low soil fertility 4. Lack of farm inputs (fertilizer, improver seeds, pesticides, etc)	5. High price of farm inputs 6. Shortage of labor 7. Inadequate farm land 8. No farm land



**MODUEL IV: Perception of households on Climate information, risk, vulnerability and adaptation practices**

Ask the household head or mother or father or mature/adult family member.

<b>Household perception on weather/Climate information</b>			
<b>401.</b> Have you ever heard about climate change issues?		1. Yes    2. No	
<b>402.</b> How do you describe the pattern of current climatic condition relative to the condition before 5 to 20 years?		1 = changed 2 = no change (the same) 3 =I do not know	
<b>403.</b> How do you describe the pattern of environmental temperature during the last 5 to 20 years?		1 =Decreasing 2 =Increasing 3 =No change 4 = I don't know	
<b>404.</b> How do you describe the pattern of rainfall amount during the last 5 to 20 years?		1= Decreasing 2= Increasing 3= No change 4= I don't know	
<b>405.</b> Do you think the problem of climate change affects you as a person?		1. Yes 2. No 3. I don't know	
<b>406.</b> Do you think the problem of climate change can be solved at all?		1. Yes 2. No 3. I don't know	
<b>407.</b> Do you get weather/climate related information (rainfall, temperature, humidity, precipitation, etc). Enumerators please probe based on Q408 below.		1. Yes    2. No	<b>If no skip to Q501</b>
<b>408.</b> If yes to <b>Q407</b> , where do you get weather/climate change related information? ( <b>Multiple response question</b> )			
1. Radio 2. Television 3. Newspaper/flyers 4. Mobile phone SMS message 5. Mosque/church/religious leaders 6. Cooperatives/CBOs (idir, ikub, etc) 7. School children/students and School mass-media		8. Extension agents (DA, HEWs, KM) 9. Neighbors/village 10. Community early warning committee 11. Kebele development/extension workers (DAs, HEWs, etc) 12. Traditional leaders/elders 13. Meteorologists, Researchers and NGOs 14. Market centers/Traders/input providers 15. Woreda office (Agriculture/Pastoralist office, DPPO, etc)	
<b>409.</b> If yes to Q407 above, do you get/receive the following weather related information?	<b>410.</b> Forecast of onset/Start of rain and cessation/off set of rain	1. Yes	2. No
	<b>411.</b> The likely intensity of rains	1. Yes	2. No
	<b>412.</b> Forecast of planting time	1. Yes	2. No
	<b>413.</b> Risk projections for extreme weather events	1. Yes	2. No
	<b>514.</b> Forecast of pest or disease outbreak	1. Yes	2. No
	<b>515.</b> Anticipated temperature and its impact on crop & livestock	1. Yes	2. No
	<b>416.</b> Precipitation	1. Yes	2. No
	<b>417.</b> Changing soil moisture and/or temperature	1. Yes	2. No
	<b>418.</b> Soil water availability under future scenarios	1. Yes	2. No
<b>419.</b> Again if yes to Q407, how frequent do you get climate/weather information?			

1. Daily 2. Weekly 3. Within 10 days	4. Bi-monthly (every 2 weeks) 5. Monthly 5. 2-3 months
<b>Now I would like to ask you about how do you use climate information for decision making</b>	
<b>420.</b> Do you use the information that you received to make decision on your farming?	1. Yes 2. No
<b>If no skip to Q501</b>	
<b>421.</b> If yes to Q420, what farming decisions you make using the weather/climate change information that you get?	
1. Planning for planting time/season	13. Forecast the likely occurrence of conflict
2. It helps me forecast harvesting and trashing time	14. Forecast human diseases outbreak
3. It helps me select type of seed/crop to plant	15. Forecast crop diseases, and livestock diseases
4. Plan for type of weeding (manual and herbicides)	16. Share information with others/villages/elders/neighbors
5. Select type of fertilizer	17. Select better/best crops to plant
6. Use pesticides	18. Informs time and type of weeding
7. Forecast expected onset and cessation of the rainy season.	19. Forecast harvesting time and storage
8. Forecast the likely intensity of expected rains	20. Forecast expected onset/cessation of the rainy season.
9. Forecasts drought/hunger	21. Forecast the likely intensity of expected rains
10. Forecasts planting time/season	22. Forecasts drought/hunger
11. Forecast flood warnings	23. Forecasts planting time/season
12. Forecast market prices (crops, livestock, goods, etc)	
<b>MODULE V: TECHNOLOGIES AND MANAGEMENT PRACTICES</b>	
<b>Now I would like to ask you about climate adaptation practices/actions at household level. Please respond to the following questions.</b>	
<b>Technology type</b>	<b>Response</b>
	<b>If yes how many hectares? (Skip the shaded areas)</b>
<b>501.</b> Do you harvest Rain water (ponds, roof catchments, storage, etc)	1. Yes    2. No
<b>502.</b> Do you plant tree seedlings?	1. Yes    2. No
<b>503.</b> Do you use weather index-based crop insurance	1. Yes    2. No
<b>504.</b> Do you use weather index-based livestock insurance	1. Yes    2. No
<b>505.</b> Do you have diversified income sources-please cross-check response with Q301&316.	1. Yes    2. No
<b>506.</b> Do you use synthetic/industrial fertilizer (UREA, DAP)	1. Yes    2. No
<b>507.</b> Do you use organic fertilizers (dung/manure, compost)	1. Yes    2. No
<b>508.</b> Do you use mixed/intercropping	1. Yes    2. No
<b>509.</b> Do you use high yielding and drought tolerant crop seeds (maize, potato, sorghum, etc)	1. Yes    2. No
<b>510.</b> Do you use energy saving stoves and or solar panel	1. Yes    2. No
<b>511.</b> Do you practice bush thinning from	1. Yes    2. No

pasturelands			
512. Do you replant when crop fails	1. Yes	2. No	
513. Do you use crop rotation/switching crops	1. Yes	2. No	
514. Do you reclaim rangeland and protect area closures	1. Yes	2. No	
515. Do you use mulching	1. Yes	2. No	
516. Do you participate in Soil and water conservation (soil bund, terracing, flood diversion, etc)?	1. Yes	2. No	
517. Do you use herbicides (for weeding) and pesticides	1. Yes	2. No	
518. Do you practice livestock hay making and reserve livestock feed	1. Yes	2. No	
519. Do you use irrigation for planting/farming	1. Yes	2. No	
520. Do you rear/keep different livestock species	1. Yes	2. No	
521. Do you use bednets	1. Yes	2. No	
522. Do you use storm shelter	1. Yes	2. No	
523. During which months did you have <u>enough food</u> for the last 12 months of 2006/07 E.C and for which months <u>not enough food</u> from all different sources?	<b>Enumerators-</b> Please do not read the months for the respondent rather you should ask months of the year for which the household had enough food and “Not enough food. For each month, enter “1 or 2” to represent the household either had “Enough food or “Not Enough food for that month.		
	<b>524. Month with enough food</b>	<b>1 =Yes</b>	<b>2 = No</b>
	1. February 2007		
	2. January 2007		
	3. December 2007		
	4. November 2007		
	5. October 2007		
	6. September 2007		
	7. August 2006		
	8. July 2006		
	9. June 2006		
	10. May 2006		
	11. April 2006		
	12. March 2006		
<b>Scale:</b> 1= not vulnerable      2= less vulnerable, 3- moderately vulnerable, 4= highly vulnerable			
<b>525. Vulnerability ranking exercise:</b> based on the above level of severity (Likert scale) please ask the respondent to rank the degree of vulnerability of the following community members/groups (households, individuals and family members with regard to food insecurity/climate change impact?			
<b>Category</b>	<b>1</b>	<b>2</b>	<b>3</b>
1. Adult Male no adult female HHs			
2. Adult female no adult male HHs			
3. Child no adult HHs			
4. Women in women headed HHs			
5. Women in male headed HHs			
6. Women in child headed HHs			
7. Male headed HHs			

### **Annex 3: Focus Group discussion questions**

**Principles:** before you commence your discussion/ask question please acknowledge and thank the participant for their time and willingness to participate on the FGD.

**General instruction:** take name of the list of the participants/interviewees (disaggregated by sex, age, disability) from where they are and their responsibilities (if any); focus on major components of outcomes of the project: Community capacity, livelihoods, disaster, weather and climate change information, EWI, Climate change adaptation/mitigation, farming technologies and management practices.

**Strategy and modality of FGD:** please organize separate three FGDs (men only, women only and mixed groups including a mix of elders, men and women, youth boys and girls). For the Men alone and Women alone group it is advisable to conduct the FGD with elder groups who are able to give detail information and knowledge from experience.

#### **Part I: Focus group Discussion (FGD)**

##### **1. Please tell us the main livelihoods/income sources of the community in your area/kebele?**

- What crops do you cultivate?
- What livestock types and species?
- Have you engaged in any Off-farm and non-farm businesses, what type?
- Is there any other IGAs? Example coping measures during stress/slack period?
- Are there different livelihoods for men, women, youth and old people? Please explain/mention?
- What common livelihood/development challenges do exist in this area?
- Livelihood/income option Ranking: Use PRA/Ranking exercise to identify the top three out of the list.

##### **2. What is (are) the most common hazards/disaster in your area?**

- List Hazard/disaster types in the area, community and HH capacity?
- Who are the most vulnerable and at risk (please compares and contrast between different households headed by male, Female and young children, person with disability, elders etc? How do you describe its impact at household and community level?
- Causes of Hazard/disaster?
- What is the impact of disaster at HH, individual ad community level?
- Negative and Positive impact on your life and livelihoods?
- How do you see the change based on your experience? Please ask probing questions.
- To what extent is climate change an issue within the community?
- How do you describe your current livelihood/income compared to the past 10 and above?
- What do you suggest to reduce the impact of climate change?
- Rank using PRA technique.

##### **3. Risks and Vulnerability**

- What are Climate Change risks/vulnerabilities of the Farming/Agro-pastoral/Pastoral Communities at woreda level?
- Who are the most at risk/vulnerable
- What individual and communal coping mechanisms were/are being practiced both at community level and woreda level? Include traditional mitigation strategies/practices.

##### **4. Coping Mechanism (short term), and Adaptation/Mitigation (long term)**

- What are the common adaptation/coping mechanisms
- What livelihood options?

- How long it took/takes you to recover from the impact of the disaster?
- What good ways/mechanism do you suggest to easily adapt/cope up with the disaster effect you have/suggest?
- How do you see the communities' capacity to recover from the impact?
- Individual and communal effort experienced.
- Do have/practicing community development plan/contingency plan?
- Do you have preference from one coping mechanism over the others and why?

**5. What technologies and management practices/strategies the community uses to adapt or mitigate the impact of climate change/shock**

- Ask current individual/household, communal and government efforts/supports existing to improve adaptation.
- What crops/types of crop seed they use, livestock species they rear and plan for planting and harvesting
- What land management, livestock management and farming techniques and technologies
- Pre and post-harvest management practices
- What do you propose as Climate Change Adaptation/Mitigation?

**6. Information and knowledge sharing:**

- What types of information do you get in relation with climate change and disaster?
- Whether they get early warning information,
- Do you get information on weather forecast (rainfall, temperature, extreme events)?
- From where do you get the information?
- How do you get information?
- What decisions do you make using the information?
- Is it help full to get such information and are you willing to get involved in sharing information using traditional means or using Mobile SMS?

**7. Recommendations and way forward:**

- Is it possible to revers CC impact? Please explain
- Tell us the best areas of intervention to cope up with impact of climate change?
- How to reduce the impact of disaster?

#### **Annex 4: Key Informant Interview (KII) questions**

##### **Part II-Key Informant Interview**

Ask only elder men, women, person with disability/vulnerable groups, kebele officials and development Agents, extension workers, kebele manager.

- Who is affected most among the community by the impact of the climate-related Hazards/disaster, why and how?
- What information is made available to community (when, how and how frequent)?
- How disaster does affect people?
- What do individuals; households and community in general have (economic, Social, infrastructure, knowledge and skills) to address the effect of disaster: short term (coping) and long term (adaptation).
- Are efforts that people are doing sufficient and effective to sustain their adaptation/mitigation?
- What is affecting people's ability to undertake and sustain the change they opted to (adaptation)?
- Is there any risk reduction or disaster management plan for the woreda/community?
- If yes, do community members know about it and engage in implementing it? give examples.
- What is the government doing, what is CSO/NGO doing to assist people to strengthen and facilitate community adaptation process
- What are the most three important interventions to be done by government (woreda and zonal levels), community, households and CSOs?
- What are possible options to make the farming/agro-pastoral/pastoral community more resilient to climate impacts (new crops, livestock and technologies, access to inputs, supporting institutions, credit and insurance, policies, knowledge access, etc.)?

***Say Thank you and Goodbye***